

THE MIDDLE JURASSIC FLORA OF THE KRAKÓW REGION

by

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In Kraków and its surroundings the hills are frequently built of Upper Jurassic limestone containing animal fossils and in the Middle Jurassic below there occur strata with fossil plants. A hundred years ago, in 1889, the first Polish papers on this flora by the Kraków palaeobotanist Marian Raciborski appeared, followed in 1894 by a monograph of a hundred taxa. Following the suggestion of Professor Władysław Szafer, who had been Raciborski's student, I am continuing these investigations.

I have collected about 60 more taxa and published descriptions of half of them, the remaining ones being in preparation.

The remarkable progress in palaeobotany in the last three decades is due to detailed examination of fossil plants which resulted in some exciting conclusions about their affinities. Also the Kraków Jurassic flora is being described with details of plant morphology, anatomy and pollen and spores found in fructifications. The methods are simple: maceration in acids, occasional microtome sections and observation under binocular, light and scanning microscopes. This palaeobiological approach is the main line of studies but stratigraphy is not neglected.

Except for a few ferns my material consists of gymnosperms of such living and extinct groups as *Cycadales*, *Pteridospermales*, *Caytoniales*, *Bennettiales*, *Ginkgoales* (6) and *Coniferales* (5). Although no angiosperms are known from that time (about 170 million years ago), there were found *Caytonia* fruits (3) and seeds containing *Eucommiidites* pollen grains (2), both plant organs with certain characters reminiscent of angiosperms.

Of other interesting plants there were found leaves of *Pseudotorellia* (*Ginkgoales*) with associated fragments of female fructifications resembling those of *Ginkgo* (MS in preparation). This is unusual, because various fructifications very different from those of the living *Ginkgo* are attributed to Mesozoic *Ginkgoaleans* which raises doubt as to the coherence of the group. Our flora contains also taxa new to science, such as *Harrisiolepis gucikii* gen. et spec. nov. (4) of the *Podocarpaceae*.

This evident member of the *Podocarpaceae* of which leafy shoots, cones, cone-scales with a single seed and bisaccate pollen grains are known, is interesting also from the point of view of plant geography. Its occurrence in Europe during the Mesozoic is second after the Jurassic podocarp from England, *Scarburgia blackii* (Harris 1979) and both reopen the question concerning the center of origin of the *Podocarpaceae*. At present a southern hemisphere origin of this family is accepted (e. g. Florin 1963).

The occurrence of the fern families Marattiaceae, Schizaeaceae and Matoniaceae in our flora suggests a tropical or subtropical climatic zone and the xeromorphic epidermis of many plants seems to indicate a climate with a dry season or a xeric habitat. The presence, however, of numerous fern spores in the palynological spectrum (1) suggests that humid habitats existed as well.

Research has been carried out also on several small, mainly Mesozoic floras of Poland. They are usually described under my supervision by students for the masters degree (five papers, one published) or for the doctoral degree (one thesis published, two, those of mgr E. Wcisło-Luraniec and mgr J. Icha-

Ziája are in preparation). The results of our research have been frequently presented during Polish and international palaeobotanical conferences e. g. during the XIV International Botanical Congress in Berlin.

References

1. Ichas, J. 1986. Some spores and pollen grains from the Jurassic of the Kraków region. Acta Palaeobot. 26 (1, 2): 9-28.
2. Reymanówna, M. 1968. On seeds containing *Eucommiidites troedssonii* pollen from the Jurassic of Grojec, Poland. J. Linn. Soc. London Bot. 61(384): 147-152.
3. Reymanówna, M. 1973. The Jurassic Flora from Grojec near Kraków in Poland. Part II. *Caytoniales* and anatomy of *Caytonia*. Acta Palaeobot. 14(2): 45-87.
4. Reymanówna, M. 1987. A Jurassic podocarp from Poland. Review of Palaeobotany and Palynology 51: 133-143.
5. Wcisło-Luraniec, E. 1985. New details of leaf structure in *Bilsdalea dura* Harris (*Coniferae*) from the Jurassic of Kraków, Poland. Acta Palaeobot. 25(1, 2): 13-20.
6. Wcisło-Luraniec, E. (in press). *Pseudotorellia tenuis* sp. nov. (*Ginkgoales*) from the Jurassic of the Kraków region. Acta Palaeobot.